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IN THE

SUPREME COURT OF THE UNITED STATES

OCTOBER TERM, 1986

No.

MAHAN & ROWSEY, INC.,
Petitioner,

v.

OKLAHOMA NATURAL GAS,
Respondent.

PETITION FOR A WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE TENTH CIRCUIT

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QUESTION PRESENTED

May Federal Courts base decisions on inferences that are violative of known physical, mathematical and mechanical laws?

TABLE OF CONTENTS

	Page
CITATION TO OPINION BELOW	1
JURISDICTION	2
QUESTION PRESENTED	2
STATEMENT OF THE CASE	2
REASONS FOR GRANTING THE WRIT	6
I. The Courts Below Accepted ONG's Tilted Water Table Theory Without Finding a Supporting Cause	6
II. The Courts Below Construction of the Facts is Premised on a Physical Impossibility	7
CONCLUSION	14
APPENDIX A—Opinion of Court of Appeals for Tenth Circuit	1a
APPENDIX B—Memorandum Opinion of United States District Court for the Western District of Oklahoma	1b
APPENDIX C—Proposed Findings of Fact and Conclusions of Law of United States Bankruptcy Court for Western District of Oklahoma	1c

TABLE OF AUTHORITIES

Page

CASES:

Anderson v. Oregon City Hospital Co., 214 OR 212, 328 P.2d 769, 71 ALR 2d 431 7

Bennette v. Hadder, 337 Mo 977, 87 SW2d 413, 101 ALR 1190 10

Clement v. Packer, 123 U.S. 309, 9 S.Ct. 907 12

Commonwealth Lines Insurance Company v. Pendleton, 231 Ky. 591, 21 S.W.2d 985, 66 ALR 1526 10

Dominguez v. Alburquerque Bus. Co., 58 NM 562, 273 P2d 756, 50 ALR2d 414 10

Egan Chevrolet Co. v. Bruner, (CA8 Minn) 102 F2d 373, 122 ALR 987 10

Ferdinand v. Agricultural Ins. Co., 22 NJ 482, 126 A.2d 323, 62 ALR 2d 1179 7

Fleming v. Northern Tissue Paper Mill, 135 Wis 157, 114 NW 841 10

Franks v. Jirdon, 144 Neb 693, 14 NW 2d 372 10

Hunter v. New York, O. & W. R. Co., 116 NY 615, 23 NE 9 . 10

Kenny v. Washington Properties, 128 F.2d 612 7

Morrison v. California, 291 U.S. 82, 54 S.E. 281 11

Lessig v. Reading Transit & Light Co., 270 Pa 299, 113 A 381 10

Newsom v. Glaze, 215 Ark 50, 219 SW2d 232 10

Norfolk & W. R. Co. v. Strickler, 118 VA 153, 86 SE 824 . 10

Oregon Motor States v. Portland Traction Company, 198 Or. 16, 255 p.2d 558 10

Probst v. Seyer, (Mo.) 353 S.W.2d, 91 ALR 2d 1252 . . . 7

Seiwell v. Hines, 273 Pa. 259, 116 A 919, 21 ALR 139 . . 10

Watson v. Virginia Electric & Power Co., 199 S.E.2d 774 . 7

TREATISES:

30 Am. Jur. Evidence §1086, page 239 13

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Mahan & Rowsey, Inc., prays that a writ of certiorari issue to review the decision and judgment of the United States Court of Appeals for the Tenth Circuit entered in the above entitled case on March 21, 1986.

CITATION TO OPINIONS BELOW

The opinion of the United States Court of Appeals for the Tenth Circuit, dated March 21, 1986, is not yet officially reported, but is printed as Appendix "A" hereto.

The decision of the United States District Court for the Western District of Oklahoma is officially reported at 48 BR 767 (D.C.Okl. 1985) and is printed as Appendix "B."

The proposed findings of fact and conclusions of law of the United States Bankruptcy Court for the Western District of Ok-

lahoma, is not officially reported but is printed as Appendix "C."

JURISDICTION

The judgment of the Court of Appeals for the Tenth Circuit was entered on March 21, 1986. The petitioner filed a timely petition for rehearing in the Tenth Circuit, and the petition was denied on May 5, 1986. The jurisdiction of this court is invoked pursuant to 28 U.S.C. §1254(1).

QUESTION PRESENTED

May Federal Courts base decisions on inferences that are violative of known physical, mathematical and mechanical laws?

STATEMENT OF THE CASE

This action was originally instituted on September 14, 1982, by respondent Oklahoma Natural Gas ("ONG") in an action filed in the United States Bankruptcy Court for the Western District of Oklahoma against petitioner Mahan & Rowsey, Inc., (then a Debtor under Chapter 11 of the Bankruptcy Code) and other interest owners in the Manes #1 and #3 natural gas wells. ONG sought a permanent injunction against Mahan & Rowsey, Inc.'s, producing gas from these wells and for recovery of funds for gas previously sold from the wells. ONG alleged that Mahan & Rowsey, Inc., had drilled the Manes #1 and #3 gas wells and completed the same within Oklahoma Natural Gas's Depew Storage Reservoir. The case was tried before the United States Bankruptcy Court without a jury. The Bankruptcy Court's decision rested on its reading of an article in a technical journal which had been excluded from evidence and contradicted the opinion of the court appointed expert witness. The Bankruptcy Court's proposed findings of fact and conclusions in favor of ONG were entered on December 7, 1983, and were then transmitted to the United States District Court for the Western District of Oklahoma for approval and entry of judgment.

Mahan & Rowsey, Inc., moved the District Court to disapprove the proposed findings and conclusions and to conduct an evidentiary hearing. The District Court did not conduct any evidentiary hearing

but relied upon the record of the Bankruptcy Court. The District Court declined to adopt the Bankruptcy Court's findings and conclusions, but on March 20, 1985, entered its own memorandum opinion in favor of ONG. On appeal the judgment was affirmed by the Tenth Circuit Court of Appeals on March 21, 1986.

At trial before the Bankruptcy Court, ONG alleged that Mahan & Rowsey, Inc., had completed the Manes #1 and #3 wells in ONG's Depew Storage Reservoir, a depleted natural gas field in which ONG stores gas for use during peak demand periods. Mahan & Rowsey, Inc., contended the gas from the Manes #1 and #3 was native as there is a natural "wall" of subsurface formation water between ONG's reservoir and the Manes.

There was basically one disputed factual issue; whether gas injected by ONG in its Depew Storage Reservoir "tilted" the formation water in the Dutcher Sandstone (of which the Depew Reservoir is a part) 125 feet down over a three mile span so as to cause gas communication from the Depew Storage Reservoir to the structure from which the Manes #1 and #3 produce. ONG contended its gas injections and withdrawals caused the subsurface formation water table in the Dutcher Sandstone to "tilt."

Mahan & Rowsey, Inc., contended that the subsurface water table was horizontal, thus, blocking gas migration downstructure 125 feet and three miles south to the Manes structure. It is normally anticipated that a gas/water contact in a down dip position within a formation will prevent migration of gas, either vertically or horizontally, out of such formation.

In 1967, such was the finding of the Oklahoma Corporation Commission in condemning the segment of the Dutcher Sandstone in which ONG stores gas. The Commission's order provided in part:

> "That the Dutcher Sand formation underlying the lands hereinabove described is found at an approximate depth of 3250 feet below the surface and in an off-shore bar type sand deposit which pinches out to the north, east and west by a facies change with the southern boundary *being limited by a gas/water contact in a down dip position, which prevents migration of hydro-*

> *carbons in such formation either horizontally or vertically out of such formation. . . .*" Findings of Fact from Order of Corporation Commission, Cause No. 27347, Order No. 67796 (Emphasis added)

In 1981, Mahan & Rowsey, Inc., purchased a lease located in an area approximately three miles south of ONG's Depew Storage Reservoir. Mahan & Rowsey, Inc., drilled and completed two producing wells and one dry hole. The two producing wells, the Manes #1 and #3, produced gas and small quantities of oil.

Shortly after the Manes #1 and #3 commenced production, ONG recorded pressure drop in Observation Well #6, one of seven observation wells which ONG had drilled in and around the Depew Storage Reservoir between 1964 and 1968. The purchasers of the gas from the Manes #1 and #3 ceased taking gas after ONG filed suit due to the dispute over title ownership.

The evidence presented at trial for permanent injunction consisted primarily of geologic and engineering studies. Both Mahan & Rowsey, Inc.'s, expert geologist and ONG's expert geologist mapped the Dutcher Sandstone study area which consisted of approximately 25,600 acres. Both parties' geologists mapped that part of the Depew Field, now used for the storage of gas, as the major structural feature; also a smaller structure three miles to the southwest on which the Manes wells are located and another smaller structure two miles to the northeast of the Depew structure which had in the past produced gas from the so-called "Dutcher Sand." The dominant structure in the study area is the Depew structure which ONG now utilizes as a gas storage reservoir.

The Court appointed expert witness, Espach, concluded the structural configuration between the area's precluded gas migration:

> "The way I see the problem, the gas in the Manes Area is a separate source of supply, and I don't believe that the probability of a contiguous gas leg all the way down [from the ONG storage reservoir] is a very real probability. \. ."

Engineering testimony presented consisted of numerous pressure studies, chemical analyses and calculations. However, as to the

critical issue of gas communication, the testimony was fairly straight forward. According to ONG, in or before 1968, the year Observation Well #6 was drilled, the gas from the storage reservoir had "tilted" the water table downstructure three miles south to the area of Observation Well #6-Manes resulting in contiguous gas communication between the Depew Storage Reservoir and the Manes #1 and #3-Observation Well #6 structure.

Conversely, Mahan & Rowsey, Inc., contended in defense that there was a horizontal gas/water contact for each structure (the Depew Storage structure and the Manes-Observation Well #6 structure). Mahan & Rowsey, Inc., contended there was only hydraulic, but not gas communication, between these two structures. Thus, when ONG injected gas or withdrew gas, the changing pressure on the water column caused pressure fluctuations at Observation Well #6.

The District Court, in its memorandum decision, stated, "the concept of a tilted water table is difficult to grasp because it is rare in nature; however, it is apparently a physical possibility notwithstanding its rarity." The District Court then considered ONG's only theory for how the water table in the Dutcher Sandstone might tilt. That theory was "gravity override." The District Court conceded that "while gravity override is apparently a very unusual natural phenomenon, ONG's witness opined that such phenomenon had occurred in the Dutcher formation." The District Court, concluded because of the successively lower gas/water contacts in three observation wells (Observation Well #2: subsea gas/water contact -2472 feet; Observation Well #4: subsea gas/water contact -2540 feet; Observation Well #6: subsea gas/water contact -2584 feet) that a "tilted water table" existed. The District Court had no explanation as to how this "tilted water table" occurred. The District Court declined to "usurp the role of a petroleum engineer by determining the engineering principles which explained the existence of the tilted water table. Rather the Court simply concludes it exists. . . ." Thus, the Court below concluded that due to a cause they were unable to determine, the water table in the Dutcher Sandstone "tilted" 125 feet down causing gas communication from ONG's Depew Storage Reservoir south to the Manes #1 and #3.

The explanation of the Court appointed expert, and the expert of Mahan & Rowsey, Inc., that the gas/water contact at Observation Well #4 was due to a stratigraphic trap, a common occurrence with sandstone beds, was dismissed by the District Court as being "contrived" and "rare." The Circuit Court took the position the water table tilted to create an "unfilled portion" of the formation through which natural gas migrated to the Manes wells. By every accepted law of physics, this is impossible.

REASONS FOR GRANTING THE WRIT

Mahan & Rowsey, Inc., submits the decision of the Tenth Circuit Court of Appeals for which it seeks review by this Court has adopted a result which is based upon a physical impossibility. If the rationale of the decision is perpetuated, it will substantially erode the confidence in which the federal judiciary is held. For the reason discussed below, Mahan & Rowsey, Inc., submits that the decision of the Tenth Circuit Court of Appeals warrants review by this Court on writ of certiorari.

I. The Courts Below Accepted ONG's Tilted Water Table Theory Without Finding a Supporting Cause.

The Courts below acknowledged ONG had the burden of proof, but accepted ONG's theory of the case without scientific evidentiary basis. The central focus of the case settled itself upon Observation Well #4 (between the storage reservoir and Manes #1 and #3) and the conclusion to be drawn from its gas/water contact being lower than that of the storage reservoir but higher than that of Observation Well #6. (the Manes Wells are ½ mile southwest of Observation Well #6.) The structural elevation and gas/water contact of Observation Well #4 is lower than that of Observation Well #2 but higher than that of Observation Well #6. By taking three isolated data points (i.e. well bores) and drawing a line between them, ONG persuaded the Courts below as to the existence of a "tilted water table." While the Courts accepted these points, simpliciter, as proving a tilted water table, they declined to find how such a phenomenon could occur.

The Courts below did not propose to explain how the water table

between the Depew Storage Reservoir and Observation Well #6 could possibly tilt downward 125 feet over a three mile span. The District court stated "the Court declines to usurp the role of the petroleum engineer by determining the engineering principles which explain the existence of the tilted water table." Rather, the District Court "simply concludes that it exists. . ." The District Court's conclusions, to the exclusion of all other conclusions, is admittedly without explanation. The District Court inference of a tilted water table could not be based upon conjecture or surmise, or a premise which is wholly uncertain. *Kenny v. Washington Properties*, 128 F.2d 612. The District Court's conclusion is then itself arbitrary. That arbitrary conclusion of the existence of a "tilted water table," this most critical fact ONG had to prove, shifted the burden of proof to Mahan & Rowsey, Inc. The District Court dismissed the geologically ordinary and unsurprising alternative explanation of a gas trap at Observation Well #4 as being contrived. The Courts below adopted the most astonishing conclusion to be drawn from all the evidence.

Water tables are naturally horizontal due to the effects of gravity. In order for the water table to tilt, there must be an explanation. Since this was a court proceeding, that explanation had to be demonstrated by the evidence. If the facts are not established in evidence, no conclusion may be drawn. A fact essential to a case may not be inferred in the absence of a substantial evidentiary basis. *Probst v. Seyer*, (Mo.) 353 S.W.2d,91 ALR 2d 1252. Inference of fact must be based upon facts as to which there is probative evidence and can be drawn only from a premise established by proof in the case. *Watson v. Virginia Electric & Power Co.*, 199 S.E.2d 774; *Anderson v. Oregon City Hospital Co.*, 214 OR 212, 328 P.2d 769, 71 ALR 2d 431; *Ferdinand v. Agricultural Ins. Co.*, 22 NJ 482, 126 A.2d 323, 62 ALR 2d 1179.

II. The Courts Below Construction of the Facts is Premised on a Physical Impossibility.

The only explanation which ONG had for a "tilted water table" was gravity override. While the District Court skirted the causal

factor which would have the effect of tilting the water table by declining to adopt the only theory ONG offered, Mahan & Rowsey, Inc., must conclude the District Court did, in fact, accept that theory since it was the only theory in evidence. Something must force gas, which naturally rises when met with a denser or heavier substance such as water, not to naturally compress, but instead to move downstructure forcing the infinitely heavier water out of its way. The only theory ONG offered for this phenomenon was gravity override.

In order for light, compressible gas to tilt downstructure a heavy, incompressible fluid such as water to create gravity override two factors must be present: (1) velocity, that is, speed and tremendous gas volume (mass), (2) flow, that is, there must be an ingress and an egress. When velocity ceases, no force exists to prevail over gravity. ONG injects and withdraws gas in alternate six (6) month periods. Once the ONG injection stops, **there is no flow to displace the water downstructure.**

Moreover, ONG's witness explained there is no flow of gas in the reservoir, only pressure waves. ONG's witness explained that gas was a thousand times more compressible than water and the higher the pressure in the storage reservoir the more gas could be stored as the gas compressed. ONG's witness reflected upon the fact that the pressure of the Depew Storage Reservoir had not yet reached the initial bottomhole pressures of the virgin Depew Field.

ONG shuts-in the reservoir every six (6) months, neither injecting nor withdrawing gas for 48 hours. At that time, the pressure readings throughout the observation wells **within the active Depew Reservoir are essentially the same.** Thus, after *48 hours* the Depew stabilizes, in other words, comes to equilibrium, a state of nature. Meaning, the pressure transients moving throughout the Depew Storage Reservoir cease and stabilize. Common experience compells that the supposed "tilted water table" would cease "tilting" as a result of the lack of flow.

If the gas was flowing, where would it most likely go? The structure maps of ONG's and Mahan & Rowsey, Inc.'s, geologists referenced spill points on the northeast side of the reservoir (after

which the sandstone rises upstructure). The Court's expert, decided that if any water was being displaced as a result of injection in the Depew Reservoir, it was likely the gas would displace water and move upstructure at the nearest spill point. The first place gas could rise is where it would rise. Espach found it more probable that gas would push the water table down 10 or 20 feet to the spill points shown by both litigant's geologists on the north side of the storage reservoir, and thereby escape upstructure from the Depew Storage Reservoir, rather than pushing the formation water 125 feet downstructure on the south side of the Depew Reservoir to Observation Well #6.

When questioned on cross-examination as to the gravity override ONG's witness felt caused a "tilted water table," the question was asked:

Q. Mr. Hudson, you can leave that on if you would please at least for just a moment — the gas drive mechanism in your tilted water table, gravity override scenario, the gas drive is not selective in where it goes, is it, except to seek a point of least resistence.

A. I think that's a fair analogy, yes sir.

Q. Tell me, then, sir, why the gas drive would not spill all of the water in front of it out underneath the spill points that have been referrred to heretofore?

A. Well I think the answer to that is I don't know, and the reason that I don't know why there would have been any gas moving of the — I have no evidence that there has been any gas moving through that area to begin with, and I can't tell you exactly why, so I guess my answer is I don't know.

Under ONG's theory, instead of displacing water down 10 or 20 feet to then escape north through a spill point upstructure, the gas selectively drives 125 feet downward over a three mile span. Why would the natural gas not behave as expected and seek the point of least resistance? ONG's answer is "I don't know." In the face of this failure to correlate ONG's theory to known physical law, the Courts below found ONG's southward "tilted water table" to exist, albeit without explanation. When the facts testified to are

inconsistent to natural laws and common experience, so that it is inconceivable that any such thing could have occurred, the Courts should refuse to believe it and may base this disbelief on the grounds that they will take judicial notice of the incredibility of the testimony. 30 Am. Jur. Evidence §1086, page 239. In the case of *Seiwell v. Hines*, 273 Pa. 259, 116A 919, 21 ALR 139, the Court found testimony to the effect that air currents from a passing train drew a 900 pound automobile with its brake set, standing upon lower grade than the train, forward up the grade a distance of about 2 feet and against the passing train to be so violative of the laws of nature as not to be entitled to any weight. This is consistent with other cases holding that the trier of fact may not rest its verdict upon testimony at variance with well established and universally recognized physical, mechanical and mathematical laws. *Commonwealth Lines Insurance Company v. Pendleton*, 231 Ky. 591, 21 S.W.2d 985, 66 ALR 1526; *Oregon Motor States v. Portland Traction Company*, 198 Or. 16 255 p.2d 558; *Egan Chevrolet Co. v. Bruner*, (CA8 Minn) 102 F2d 373, 122 ALR 987; *Newsom v. Glaze*, 215 Ark 40, 219 SW2d 232; *Bennette v. Hadder*, 337 Mo 977, 87 SW2d 413, 101 ALR 1190; *Dominguez v. Albuquerque Bus. Co.*, 58 NM 562, 273 P2d 756, 50 ALR2d 414; *Franks v. Jirdon*, 144 Neb 693, 14 NW 2d 372; *Lessig v. Reading Transit & Light Co.*, 270 Pa 299, 113 A 381; *Norfolk & W. R. Co. v. Strickler*, 118 VA 153, 86 SE 824; *Fleming v. Northern Tissue Paper Mill*, 135 Wis 157, 114 NW 841; *Hunter v. New York, O. & W. R. Co.*, 116 NY 615, 23 NE 9.

There must be a correlation of data within the framework of scientific knowledge and method before the correct conclusion can be deduced from the evidence. In John Harrington's book "The Dance of the Continents-Adventures With Rocks and Time" (Houghton-Mifflin Company 1983), the author described this weighing of facts as a game which had but one rule: draw the least astonishing conclusion that can be supported by the known set of facts. There must be some coordination of facts and established scientific theory before the correct conclusion can be deduced from the parts through the principle of least astonishment.

The District Court stated that ". . .in the undisturbed state of

nature Mahan & Rowsey, Inc.'s, theory would no doubt be valid." Having stated the theory supported by established laws of physics and gravity, then the District Court agreed with ONG that ". . . after thirty years of injection and withdrawal of natural gas and injection of water. . . that in this disturbed state, a tilted water table, which would permit gas communication downstructure, has occurred in the Dutcher."

There was no evidence water injection by ONG caused gas communication between the Depew Storage Reservoir and Observation Well #6 and hence to the Manes #1 and #3. Water injection *did not begin until 1970*. The supposed "tilt" in the gas/water table and concomitant gas communication to Observation Well #6 was, according to ONG, present at Observation Well #6 the year it was drilled, *1968*.

Therefore, taking ONG's theory at face value, there is no rational connection between the injection of water beginning in 1970 and the supposed "tilt" of the water table down to Observation Well #6 prior to 1968. The water injection starting in 1970 is not rationally related to ONG's case of gas communication from the Depew Storage Reservoir to Observation Well #6 as early as 1968 (the year Observation Well #6 was drilled).

A presumption of fact cannot be raised from some fact proved unless a rational connection exists between such fact and the ultimate fact presumed. *Morrison v. California*, 291 U.S. 82, 54 S. Ct. 281. The District and Circuit Court's reliance on water injection, a proved fact, as a factor proving gas communication between Depew Storage and Manes #1 and #3 must be rejected as lacking rational connection.

As to gas injection creating a "disturbed state," the Court's attention is directed to three facts established by ONG's witness:

(1) ONG has, during the history of its gas injection, never reached the pressure that existed in the virgin Depew field.

(2) Gas is 1000 times more compressible than water.

(3) As pressure increased in the Depew Storage Reservoir, the

amount of gas that could be stored increased.

The amount of gas that is stored within a defined area becomes greater as pressure increases, since gas readily compresses, and because ONG has never reached the pressure of the virgin Depew gas field; therefore, no abnormal or "disturbed state" is induced by ONG's gas injections in relation to the old Depew Field's capacity.

Since gas is 1000 times more compressible than water and the compression of gas injected has not reached the pressure of the virgin Depew Field, then logically the gas has continued to compress, instead of displacing the infinitely heavier formation water column between the Depew Storage Reservoir and Observation Well #6. The coordination of these known set of facts within the context of physical law, yields an unastonishing, more probable conclusion.

The probable conclusion is that gas injected by ONG has simply continued to compress and pressure up in the Depew storage to near its virgin, undrilled level. The Depew Storage Reservoir is only now reaching its original, virgin, pressure capacity.

The District Court's conclusion that gas injection caused an undefined disturbed state which lead to gas communication between the Depew Storage Reservoir and Observation Well #6 and hence to Manes #1 and #3 flies in the face of known facts testified to by ONG. Where facts appear, presumptions recede. *Clement v. Packer,* 123 U.S. 309, 9 S.Ct. 907. The District Court's conclusion of a "tilted water table" due to a "disturbed state" must be abandoned in light of the facts presented by ONG.

The intervention of man in natural surroundings does not alter natural laws. Occurrences purportedly induced by human manipulation must arise within the context of the laws of physics and gravity.

What has ONG done at the Depew Storage Reservoir? It has injected natural gas. While this transported gas is not gas "native" to the area, it is natural gas all the same and behaves as would "native" natural gas. This extraneous natural gas possesses no unique properties to be found in the evidence which would cause

it to divorce itself from the attributes of natural gas, those being: (1) a low specific gravity, comparable to the gravity of air; (2) compressibility, due to its diffuse molecular structure. Yet, it is this injected gas which the courts below concluded "tilts" tons of water over a three mile span.

According to the courts below, since 1970, a thirty foot thick strand of highly compressible gas (that allegedly links its Depew Storage Reservoir downstructure over three miles to Manes #1 and #3) has managed to defy the laws of gravity and physics and hold suspended at a "tilt" tons of virtually incompressible formation water. This concept of suspended animation required the trier of fact to suspend belief and embrace the single most astonishing and improbable interpretation of measured gas/water contact occuring at Observation Well No. 4. Where the facts testified to are inconsistent with natural laws and common experience, so that it is inconceivable that any such thing could have occurred, the Court should refuse to believe it and may base this disbelief on the grounds that it will take judicial notice of the incredibility of the testimony. 30 Am. Jur. Evidence, §1086, Page 239.

While ONG contends that the injection of extraneous natural gas abrogates natural law, its concomitant withdrawal of this same gas does not cause an opposite reaction. The Courts below, in accepting ONG's position without coordination of all of the facts within the laws of physics and gravity, based its decision on conjecture which flies in the face of natural law and common experience.

CONCLUSION

The decision of the Tenth Circuit Court of Appeals has sanctioned a departure of the District Court from accepted judicial proceedings as to require this Court's exercise of its powers of supervision. The Tenth Circuit's decision affirms a conclusion which, under the evidence presented, rests upon physical and rational impossibilities.

For the reasons discussed herein, the Petition for Certiorari should be granted and the judgment below reversed.

Respectfully submitted,

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APPENDIX A

PUBLISH

UNITED STATES COURT OF APPEALS
TENTH CIRCUIT

No. 85-1826

OKLAHOMA NATURAL GAS COMPANY, a division of ONEOK, INC., a Delaware corporation, *Plaintiff-Appellee*,

v.

MAHAN & ROWSEY, INC., *Defendant-Appellant*.

Appeal from the United States District Court for the Western District of Oklahoma
(D.C. No. BK-82-1390)

[March 21, 1986]

Before Logan, Baldock, *United States Circuit Judges*, and Saffels, *District Judge**.

Saffels, District Judge

**Honorable Dale E. Saffels, United States District Judge*, District of Kansas, Sitting by Designation

This action was initially brought by Oklahoma National Gas [hereinafter ONG] in the United States Bankruptcy Court for the Western District of Oklahoma. ONG sought damages plus injunctive relief to prevent Mahan & Rowsey, Inc. [hereinafter MRI] from producing gas from the Manes #1 and #3 wells. A request for preliminary injunction by ONG was denied on September 30, 1982. The matter was subsequently tried to the Bankruptcy Court on November 21, 1983 through November 25, 1983, and the Bankruptcy Court found in favor of ONG. Written proposed findings of fact and conclusions of law were transmitted to the district court for approval. MRI filed a motion on December 9, 1983, for the district court to disapprove the proposed findings and conclusions and to conduct an evidentiary hearing. The district court entered

its memorandum opinion on March 20, 1985 in favor of ONG.

On appeal, MRI claims the district court erred by failing to consider the nature of subsurface geology when reaching its conclusion that MRI's explanation of the gas/water contract at Observation Well #4 was contrived; by shifting the burden of proof by accepting ONG's tilted water table theory without finding a supporting cause; by concluding a tilted water table existed without evidence supporting a causal factor and by declining to appoint an expert engineering witness to aid the court in interpreting engineering testimony.

The standards governing appellate review are well-established. The findings of a trial court on appeal will not be reversed unless they are clearly erroneous. *Burgert v. Tietjens*, 499 F.2d 1 (10th Cir. 1974). The appellate court is not to determine whether the trial court reached the correct decision, but rather is to determine whether it reached a permissible one in light of the evidence. *E.E.O.C. v. Gaddis*, 733 F.2d 1373 (10th Cir. 1984). A reviewing court may not reverse the findings of the trial court simply because it would have decided the case differently. *Anderson v. City of Bessemer City*, 105 S.Ct. 1504 (1985). Likewise, an appellate court is not to decide factual issues de novo. *Id.* Where two permissible views of evidence exist, the fact-finder's choice between them cannot be clearly erroneous. *United States v. Yellow Cab Co.*, 338 U.S., 338 (1949). These rules apply even when the trial court's findings do not rest on credibility determinations, but are based on physical or documentary evidence or inferences from other facts. *Anderson*, 105 S.Ct. 1504.

We have carefully reviewed the record and the findings of the district court and conclude that the judgment of the district court should be affirmed. The district court carefully weighed the evidence along with expert testimony and arrived at a logical and permissible conclusion. There is nothing in the record to lead us to find that the ruling by the trial court is clearly erroneous. When viewing the decision of the trial court in its entirety, it is apparent that MRI's arguments lack merit.

The facts as summarized by the district court are essentially as

follows. In 1950, ONG obtained permission to use the depleted Dutcher sandstone formation underlying the Depew gas field in Creek County, Oklahoma. ONG used this area to store extraneous natural gas that it had produced elsewhere. In the early 1960's, the Depew storage began to reflect the loss of substantial quantities of the stored natural gas. Eight (8) observation wells were drilled between 1964 and 1968 and it was determined that gas was escaping to the northeast of the storage area. ONG drilled a series of water injection wells to block the loss and no further gas loss was recorded until May, 1982.

In 1981, MRI began drilling wells in an area three miles south of the active storage area. Two of the wells, the Manes #1 and the Manes #3 produced natural gas while a third well, the Manes #2, resulted in a dry hole. The geographic location of the Manes wells in relation to the location of the storage area and observation wells is as follows.

Observation Well No. 1 is at the far northern extremity of the storage area. Directly to the south is the M. Lewis Well, an injection and withdrawal well inside the storage area. To the southwest of the Lewis, also within the storage area, is a second injection and withdrawal well, the Big Pond. To the south and slightly to the east of the Lewis, approximately four thousand feet (4,000′) from the active storage area, is Observation Well No. 2. Due south of the Lewis, approximately eight thousand feet (8,000′) from the active storage area, is Observation Well No. 4. Due south of Observation Well No. 4 is Observation Well No. 6, some fifteen thousand feet (15,000′) from the active storage area. The Manes wells are to the west of Observation Well No. 6, almost due south of the active storage area.

The Dutcher sandstone formation is found below these wells. As it extends south from Observation Well No. 1, it occurs deeper with respect to sea level altitude and at the Manes wells it is some one hundred twenty feet (120′) lower than the main storage area.

ONG contended that the gas in its storage reservoir migrated through the Dutcher formation to the Manes wells, therefore MRI

was producing its natural gas which was injected for storage purposes. MRI denied that this occurred and contended that the gas in the storage area and the gas at the Manes wells and Observation Well No. 6 are separated by a solid column of water causing the wells to exhibit a pressure relationship, but not allowing a communication of gas.

The district court required ONG to prove three factual contentions: (1) that the Manes wells are completed in the Dutcher sandstone, the formation in which the Depew storage reservoir is found and in which Observation Well No. 6 is completed; (2) that the Manes wells are in gas communication with Observation Well No. 6; and, (3) that the system of wells comprised of the Manes wells and Observation Well No. 6 is in gas communication with the Depew storage area.

The district court found the Manes wells to be completed in the Dutcher sandstone formation, the same formation in which Observation Well No. 6 and the Depew storage reservoir are found, thereby rejecting testimony of MRI's geology expert on the basis of flawed charts and conflicting testimony with that of MRI's other experts. The district court then found the Manes wells to be in gas communication with Observation Well No. 6 because of a striking pressure relationship between the wells, the close proximity of the wells, and the similar, if not identical, gas produced from the wells.

The district court finally concluded that the Manes wells and Observation Well No. 6 are in gas commuinication with the Depew storage area and it is this finding which MRI so vigorously challenges. The district court noted MRI's opposition to ONG's theory of gas communication to be well-based; however, found it to depict the natural conditions of the Dutcher sandstone at equilibrium. Thereafter, the district court found that area not to be in equilibrium as the result of over 30 years of injection and withdrawal of natural gas and injection of water. The district court agreed with ONG that a tilted water table which slopes downward to the south allows for an unfilled portion of the formation through which natural gas can migrate from the storage area to the Manes wells. The district court relied on ONG's "strong evidentiary basis" to support this theory.

Also, the existence of gas in the observation wells between the storage area and the Manes wells negate the assertion that the Dutcher is completely water saturated between these points. The district court rejected MRI's assertion that each of the observation wells might be drilled into a gas trap to be contrived and less believable than ONG's theory. The district court found it would strain credibility to conclude that every one of the observation wells was drilled into a gas trap. Also, the district court relied on expert testimony that the gas produced by the Manes wells is not native natural gas because of the presence of helium in the gas, the lack of certain organic compounds normally found in native natural gas, the dissimilar composition of the gas in the Manes wells in relationship to native natural gas produced by other wells in the area, and the bottom hole pressures encountered in the Manes wells exhibit characteristics unexpected from a native natural gas reservoir.

First, MRI contends that the district court did not consider the nature of subsurface geology when concluding that its explanation was contrived. MRI asserts that the Dutcher sandstone is characterized by depressions, arches, cracks, holes and valleys creating barriers trapping hydrocarbons indefinitely until extracted by drilling. MRI argues that its theory was not any more contrived than nature itself and the district court erred by making its finding without evidence. This argument lacks merit. The district court carefully weighed and balanced the conflicting theories along with the evidence submitted and determined the theory of ONG to be more plausible. This cannot give rise to clear error.

Next, MRI contends that by accepting ONG's theory of a tilted water table without finding a supporting cause, the district court impermissibly shifted the burden of proof to MRI. The district court's memorandum order makes clear that it was aware at all times that ONG had the burden of proof in this matter and specifically refers to ONG's burden of proof when discussing its theory of gas communication. MRI makes much of the district court's use of the word "rare" when discussing MRI's theory of stratigraphic traps. The findings of a trial court should be considered in their entirety. See *Weise v. United States*, 724 F.2d 587 (7th Cir. 1984).

When viewing the district court's opinion in its entirety, MRI's argument on this point cannot stand. The district court carefully weighed both theories and found the theory of ONG to be more believable and to be supported by the evidence.

MRI next argues that the district court erred by finding a tilted water table existed without determining a rational causal factor proven by the evidence. The district court relied on the evidence presented and concluded that a tilted water table occurred in the region although the court did not conclusively determine whether it was caused by gravity override or some other factor. The district court had substantial evidence on which to base its conclusion and was not obligated to find the cause of the existing condition. The trial court does not have to make findings as to every detail. *Nulf v. Int'l. Paper Co.*, 656 F.2d 553 (10th Cir. 1981) "Findings of fact are sufficient if they indicate the factual basis for the court's general conclusion as to ultimate facts and are broad enough to cover all material issues." *Id.* at 561.

Finally, MRI argues that they are being deprived on substantive due process of law because of the district court's failure to appoint its own independent expert witness. MRI asserts that without the aid of an independent witness, the district court lacked the expertise to weigh the scientific principles involved. The district court has discretion to appoint an independent expert witness. See Rule 706(a), Federal Rules of Evidence, *Kian v. Mirro Aluminum Co.*, 88 F.R.D. 351 (E.D. Mich. 1980). The fact that the parties' experts have a divergence of opinion does not require the district court to appoint experts to aid in resolving such conflicts. *Georgia-Pacific Corp. v. United States*, 640 F.2d 328 (Ct. Cl. 1980). We conclude that the district court was in no way obligated to appoint an expert in this case and its failure to do so cannot give rise to error.

The judgment of the district court is hereby AFFIRMED.

APPENDIX B

IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF OKLAHOMA

Bankruptcy No. 82-01390
(Chapter 11)
Adversary No. 82-0298(A)

OKLAHOMA NATURAL GAS COMPANY, a division of ONEOK INC., a Delaware corporation, *Plaintiff*,

v.

MAHAN & ROWSEY, INC., REDA N. MANES, DOYLE E. MANES, NORMA POND DILLARD, IMO LONGFELLOW VAN BUSKIRK nee DAVIES, DAVID H. LOEFFLER, ELLA B. SHAW, SNEED COMPANY, HEIRS OF LEOTA POND HANCOCK a/k/a LEOTA POND HANCOX, BILL E. JOHNS, N. F. WILDER, HEIRS OF W. A. MARTIN, EQUITABLE ROYALTY CORPORATION, KENNETH H. GOETZKE, GEORGE D. GOETZKE, ED KERR, INC., VISA EXPLORATION COMPANY, EDGAR TENENT, DAN TURLEY, JOHN REYNOLDS, CLYDE TOWERY, BESS HARRINGTON, O. B. HAYHURST, CLARA TURNBULL, MRS. JAMES A. McDONALD, MARGARET TURNBULL, K.L. TURNBULL, WENDEL H. TURNBULL, MRS. NOEL D. MOORE, RAINEY OIL COMPANY, and TREND RESOURCES, LIMITED, *Defendants*.

MEMORANDUM OPINION

The Plaintiff Oklahoma Natural Gas (ONG) initiated this action as an adversary proceeding in the Bankruptcy Court of this judicial district against three Defendants, one of whom, the Defendant Mahan & Rowsey, Inc. (MRI), is a debtor in bankruptcy litigation conducted pursuant to Chapter 11 of the Bankruptcy Code, 11 U.S.C. § 1101 - 1174 (1982). ONG subsequently amended its Complaint to add as Defendants numerous parties alleged to be

fractional interest holders in the MRI wells that are the subject of this litigation. Rainey Oil and Trend Resources were allowed to intervene as parties Defendant on July 6, 1983. Shortly thereafter, the Bankruptcy Court dismissed two of the original Defendants, Kerr-McGee and Warren Petroleum, thus giving the adversary proceeding the current array of parties set forth above.[1]

In its Complaint, ONG alleged that MRI drilled two natural gas wells, the Manes No. 1 and the Manes No. 3 ("the Manes wells"), into ONG's underground natural gas storage reservoir ("the Depew reservoir") maintained in a depleted formation underlying Creek County.[2] ONG further alleged that MRI was producing natural gas belonging to ONG from the reservoir and selling it to Kerr-McGee and Warren Petroleum. As a remedy ONG sought three types of relief: (1) damages in the amount of $542,000, representing the gas produced by and sold from the Manes wells; (2) a temporary restraining order and preliminary injunction prohibiting the payment of proceeds of the gas sales to MRI pending the outcome of the litigation; and, (3) a temporary restraining order, preliminary injunction and permanent injunction prohibiting MRI from producing any natural gas from the Manes wells. The pertinent temporary restraining order was initially granted by agreement of the parties, but was subsequently dissolved on September 20, 1982 when the Bankruptcy Court denied ONG's application for a preliminary injunction. As a practical matter, however, ONG received the injunctive relief it desired, as the wells were shut in when Kerr-McGee and Warren Petroleum ceased purchasing natural gas from MRI on October 22, 1982. Further, the amount held by those parties attributable to gas production from the Manes wells was deposited into an escrow account which is now held by the Clerk of the Bankruptcy Court pending the outcome of this proceeding.

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[1] Because of the identity of interests among the numerous parties Defendant, the Court will in the interest of clarity refer to the Defendants collectively as MRI. However, it should be noted that the remaining parties Defendant are working interest owners, royalty interest owners, or overriding royalty interest owners in the Manes wells whose rights are affected by this litigation.

[2] In fact MRI drilled three wells in the disputed area. However, the Manes No. 2 well produced a dry hole and is therefore of no interest to this litigation.

The adversary proceeding reached its trial on the merits before the Bankruptcy Court November 21-25, 1983. On November 29, 1983 the Bankruptcy Court entered verbal findings of fact and conclusions of law into the record. On December 7, 1983 an order was issued summarizing these findings and conclusions.[3] The Bankruptcy Court found that ONG had prevailed on its claim against MRI and was therefore entitled to a permanent injunction and disbursement of the funds held in escrow. These findings and conclusions were forwarded to this Court for consideration in accordance with the *District Court Rule on Referral of Bankruptcy Cases*, Misc. Order No. 9 (W.D. Okla. Dec. 22, 1982) of the W.D. Okla. R.P. ("the referral rule").[4]

Almost immediately MRI motioned this Court to disapprove the proposed findings of fact and conclusions of law forwarded by the Bankruptcy Court. ONG responded in opposition to MRI's motion, supporting the findings and conclusions of the Bankruptcy Court. Oral argument was conducted on May 7, 1984 and the Court at that time took under advisement both MRI's motion and the Bankruptcy Court's proposed findings of fact and conclusions of law. A final round of briefing has been completed, and the Court is now prepared to enter its findings of fact and conclusions of law as required by the referral rule. *Cf.* 28 U.S.C. § 157(c) (1) (Supp. 1984). For that purpose the Court issues this Memorandum Opinion. *See* Fed. R. Civ. P. 52.

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[3] The Bankruptcy Court also issued its findings of fact and conclusions of law concerning MRI's counterclaim for abuse of process. This counterclaim was maintained only by the individual Defendant MRI; no other parties Defendant joined. Just before trial on the merits MRI persuaded the Bankruptcy Court to bifurcate the proceedings, reserving trial on the counterclaim until after completion of trial on ONG's claim. However, after finding in favor of ONG on its claim, the Bankruptcy Court proceeded to dispose of MRI's counterclaim as well.

[4] As the Court will be making its own findings of fact and conclusions of law, *see infra* at 6, those made by the Bankruptcy Court will be neither recounted nor summarized. However, those findings and conclusions were both meticulous and detailed and reflect the careful consideration given to the evidence by the Bankruptcy Court.

I.

The first issue that the Court must address concerns the standard of review to be applied to the findings of fact made by the Bankruptcy Court. ONG contends that the Court should apply the "clearly erroneous" standard set forth in Fed. R. Bankr. P. 8013, 11 U.S.C.A. (West 1984), by which the Court would be required to accept the Bankruptcy Court's factual finding unless clearly erroneous. MRI, on the other hand, asserts that the Court should apply the standard of review set forth in the referral rule, § (e)(2)(B), which would permit the Court to give the Bankruptcy Court's findings whatever weight it found appropriate. MRI contends that the findings deserve no weight and that a *de novo* review is in order in this case.

The review issue in this case is part and parcel of the jurisdictional morass created by the decision of the United States Supreme Court in *Northern Pipeline Co. v. Marathon Pipeline Co.*, 458 U.S. 50 (1982). In *Marathon Pipeline*, the Supreme Court invalidated the "broad grant of jurisdiction to the bankruptcy courts," concluding that the jurisdictional portion of the Bankruptcy Act of 1978, 28 U.S.C. § 1471 (1982), impermissibly vested attributes of an Article III federal court in a legislatively created bankruptcy court not protected by the provisions of Article III. 458 U.S. at 87. Thus, many of those matters formerly thought to be within the purview of the Bankruptcy Court are now within this Court's province, most notably those matters involving state created rights and remedies. To alleviate the jurisdictional chaos left in the wake of *Marathon Pipeline*, this Court adopted the referral rule, which permits referral to the Bankruptcy Court of certain matters within this Court's jurisdiction which are nevertheless related to bankruptcy proceedings. However, the referral rule reflects the impact of *Marathon Pipeline;* while such matters may be referred to the Bankruptcy Court, it is incumbent upon this Court to render a final decision on all matters which exceed the jurisdictional limits of the Bankruptcy Court as modified by Marathon Pipeline.

It is with this scheme in mind that the Court must determine the proper standard of review to be applied in this case. As the dispute herein involves a state created right and remedy, it is a matter

outside the jurisdiction of the Bankruptcy Court. However, as this Court has previously noted, the Bankruptcy Court is empowered to hear such disputes under the referral rule. *Oklahoma Natural Gas v. Mahan & Rowsey, Inc.*, Adv. No. 82-0298 (W.D. Okla. June 29, 1983). Because the Bankruptcy Court's power to hear the adversary proceeding herein arises solely from the referral rule, it is the Court's opinion that the standard of review prescribed by that rule should be applied in favor of the now questionable bankruptcy rule. Thus, the Court's review of the Bankruptcy Court's proposed findings of fact must be in accordance with the referral rule, which provides in pertinent part:

> In conducting review, the district judge may hold a hearing and may receive such evidence as appropriate and may accept, reject, or modify, in whole or in part, the order or judgment of the bankruptcy judge, and need give no deference to the findings of the bankruptcy judge.

Referral Rule, Mis. No. 9(e)(2)(B) (W.D. Okla. December 22, 1981). *Cf.* 28 U.S.C. § 157(c)(1) (Supp. 1984).

Ordinarily this Court would give great deference to the findings made by the Bankruptcy Court, perhaps such deference as would create a *de facto* "clearly erroneous" standard of review such as that provided by Fed. R. Bankr. P. 8013. The Bankruptcy Court performed an invaluable service in hearing this matter and deliberating on evidence that was both controversial and highly technical, and this Court appreciates the careful consideration and keen understanding exhibited by that court. However, there is some question of the propriety of the Bankruptcy Court's consideration of a learned treatise which had previously been ruled inadmissible. Rather than become involved in the merits of this hotly contested issue, involving constitutional implications, the Court simply chooses to review the record *de novo* and to make its own findings of fact and conclusions of law.[5] To that extent MRI's Motion to the District Court

[5] In this regard the Court simply chooses to avoid any possible chance that the Bankruptcy Court's consideration of the treatise was erroneous. Still, the Court must note that, were it required to address the merits of this proposition, the Court would be inclined to conclude that any error committed was most likely harmless error. *See* Fed. R. Civ. P. 61.

Not to Approve or Endorse Proposed Findings of Fact and Conclusions of Law By the Bankruptcy Court is granted.

II.

Much of the factual background of this case is not in dispute. The area in question is the Depew gas field in Creek County, Oklahoma, which began production of native natural gas in the early 1920's but reached the stage of primary depletion by the end of the 1940's. In 1950, ONG obtained permission to use the depleted Dutcher sandstone formation underlying the Depew field for underground storage of extraneous natural gas produced elsewhere by ONG.[6] ONG then began storing natural gas in the formation and has done so to date, using approximate six month cycles of injection during low demand periods and withdrawal during high demand periods.

In the early 1960's the Depew storage began to reflect the loss of substantial quantities of the stored natural gas. In an effort to determine the cause and location of a leak, ONG drilled eight observation wells between 1964 and 1968. It was determined that the gas was escaping to the northeast of the storage area, and ONG drilled a series of water injection wells to inject water into the storage area to block the loss.[7] This procedure was apparently successful, as ONG recorded no further gas loss from the storage area until May of 1982, when full scale production from the Manes wells began.

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[6] Such permission was obtained by Order No. 67796 of the Oklahoma Corporation Commission. Further, ONG has acquired gas storage agreements authorizing the use of the area for storage from surface owners and mineral interests owners in the area. Indeed, ONG has such agreements with all surface owners and mineral interests owners underlying the Manes No. 3 well, and all surface owners and one third of the mineral interest owners underlying the Manes No. 1 well. There is thus no dispute that ONG is authorized to store gas in the area in which the Manes wells are located; the only dispute is whether those wells are producing ONG storage gas or native natural gas not belonging to ONG.

[7] Actually, two of the observation wells, No. 3 and No. 8, were converted into water injection wells in addition to those wells drilled exclusively for the purpose of water injection.

In 1981 MRI obtained mineral leases and began drilling wells in an area some three miles to the south of the active storage area. Two of the wells, the Manes No. 1 and the Manes No. 3, produced natural gas. A third well, the Manes No. 2, resulted in a dry hole. The producing wells were shut in, however, because MRI lacked a market for the gas. In February of 1982 a market was obtained when MRI concluded gas sales agreements with Kerr-McGee and Warren Petroleum. Production began again in April of 1982, continuing until October of that year, when the buyers ceased purchasing the natural gas. The wells were shut in at that time and remain so to date.

The geographical location of the Manes wells, in relation to the location of the storage area and several of the observation wells, is extremely important in this case. Observation Well No. 1 is at the far northern extremity of the storage area. Directly to the south is the M. Lewis well, an injection and withdrawal well inside the storage area. To the southwest of the Lewis, also within the storage area, is a second injection and withdrawal well, the Big Pond. To the south and slightly to the east of the Lewis, approximately four thousand feet from the active storage area, is Observation Well No. 2. Due south of the Lewis, approximately eight thousand feet from the active storage area, is Observation Well No. 4. Due south of Observation Well No. 4 is Observation Well No. 6, some fifteen thousand feet from the active storage area. The Manes wells are to the west of Observation Well No. 6, almost due south of the active storage area. The close proximity of the Manes wells to Observation Well No. 6 is significant in this case.

Also significant is the positioning of the Dutcher sandstone formation, the underground formation into which ONG pumps its extraneous natural gas. This formation, which is ONG's underground storage reservoir, is found below all of the wells mentioned above; indeed, with but one exception, the parties agree that all those wells are completed in the Dutcher sandstone.[8] An extremely

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[8] MRI's geology expert testified that the Manes wells are completed in a formation underlying the Dutcher. However, as will be noted, the formation into which the Manes wells are completed is relatively insignificant to the outcome of this litigation and was not seriously contested at trial.

important aspect of the Dutcher is that, as it extends south from Observation Well No. 1, the Dutcher occurs deeper with respect to sea level altitude; at the Manes wells the Dutcher is some one hundred twenty feet lower than the main storage area. The significance of this fact, in light of the positioning of the various wells in the area, will be discussed below.

III.

ONG's theory of the case requires it to prove three major factual contentions: (1) That the Manes wells are completed in the Dutcher sandstone, the formation in which the Depew storage reservoir is found and in which Observation Well No. 6 is completed; (2) That the Manes wells are in gas communication with Observation Well No. 6; and, (3) That the system of wells comprised of the Manes wells and Observation Well No. 6 is in gas communication with the Depew storage area. Only this last factual issue was hotly contested at trial; however, the Court will consider each factual issue *seriatim*.

A.

MRI does not seriously debate that the Manes wells are completed in the Dutcher sandstone, the same formation in which Observation Well No. 6 is completed. However, the testimony of MRI's geology expert does raise a factual issue in this regard, and for the record the Court finds that the three wells are all completed in the Dutcher sandstone formation.

This issue arises because there exist two sandstone formations underlying the area in question. One is the Dutcher, which has previously been mentioned. It is undisputed that the storage reservoir lies within the Dutcher, and that all of ONG's wells, including Observation Well No. 6, are completed in this formation. The second is the Morrow, an older formation deposited at an earlier time in history, which is found beneath the Dutcher formation.[9]

[9] MRI's experts referred to the Dutcher as the Atoka sandstone and the Morrow as the Pennsylvania unconformity sandstone. In the interest of clarity the Court chooses to use the terminology used by ONG's experts: The Dutcher and the Morrow.

MRI's geologist testified that the Manes wells are completed in the Morrow formation, and are isolated from ONG's storage reservoir, and therefore Observation Well No. 6, by an impenetrable shale barrier. ONG's experts, however, testified that the Manes wells are completed in the Dutcher formation.

The Court finds more believable the testimony of ONG's geology experts. The first expert, a consulting geologist, testified that the Dutcher is continuous from the storage area to the Manes wells, and that the Manes wells are completed in that formation. He also testified that, while there is some evidence that the Morrow exists below Observation Well No. 6, that well is not deep enough to be completed in the Morrow. He further testified that the Morrow does not exist below the Manes wells.

ONG's second witness, a paleontologist and biostratigrapher, offered testimony that is consistent with and supportive of the geologist's testimony. He opined, as did the geologist, that there is no Morrow formation beneath the Manes wells.

MRI's geology expert, on the other hand, testified that the Morrow does indeed exist below the Manes wells, and that those wells are completed in the Morrow. The Court finds this expert's testimony unpersuasive for two reasons. First, his charts were demonstrated to be flawed at trial, casting some doubt on the validity of those exhibits prepared by him and relied on in his testimony. Second, his testimony in many respects conflicted with that of MRI's other experts. For example, as noted above, he testified that an impenetrable shale barrier isolates the Morrow from the Dutcher; however, it was overwhelmingly demonstrated by ONG, and acknowledged by MRI's engineering experts, that the Manes wells were in some form of communication with Observation Well No. 6. This of course negates the idea that an impenetrable barrier exists, as those wells could not communicate at all unless the structures between the Dutcher and the Morrow are at least permeable to water.[10]

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[10] The speculation that such communication might occur notwithstanding the impenetrable barrier through a fault or leaky well strikes the Court as somewhat contrived; in any event, it is mere speculation.

While the testimony of MRI's geologist was helpful and instructive for the Court, it is simply not as believable as that provided by ONG's experts on this issue. Accordingly, the Court finds that the Manes wells are completed in the Dutcher sandstone formation, the same formation in which Observation Well No. 6 and the Depew storage reservoir are found.

B.

Another factual issue not causing serious controversy is whether the Manes wells are in gas communication with Observation Well No. 6. MRI admits the existence of pressure communication between the wells, as indeed it must in light of the overwhelming evidence of the pressure relationship between the wells. While pressure communication does not necessarily enable natural gas to migrate from one well to another, MRI does not seriously dispute the existence of gas communication, either. Indeed, it is MRI's theory that the Manes wells and Observation Well No. 6 are in a separate reservoir of native natural gas and not in the Depew Storage reservoir, and gas communication between those wells is therefore not only possible but also likely.[11] MRI's engineering experts offered no opinion concerning the existence of gas communication between these wells, but seemed willing enough to admit that it does occur. The same can be said for the Bankruptcy Court's independent expert. Thus, the Court concludes that the Manes wells and Observation Well No. 6 are in gas communication.

There is ample evidence to support such a finding. First, there is a striking pressure relationship between the wells. Second, as noted above, the wells are in close proximity, completed in the same formation, and are nearly equal in depth. Third, studies of gas samples from the Manes and from Observation Well No. 6 indicate that the wells produce strikingly similar, if not identical, gas. Given this persuasive evidence, and the absence of evidence

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[11] This theory explains why the formation issue mentioned above is relatively unimportant to MRI's case. It is MRI's contention that, regardless which formation the Manes wells are in, those wells produce from a native natural gas reservoir which includes Observation Well No. 6, not from the Depew Storage reservoir.

to the contrary, the Court finds that there is gas communication between the Manes wells and Observation Well No. 6.

C.

The final factual issue, whether the Manes-Observation Well No. 6 system is in gas communication with the Depew storage reservoir, is the most hotly contested question of the litigation. ONG contends, and bears the burden of proving, that the gas in its storage reservoir migrates through the Dutcher formation to the Manes wells; thus, ONG asserts that MRI is producing ONG's extraneous natural gas injected into the Dutcher for storage purposes. MRI, on the other hand, asserts that the storage reservoir is separated from the system of wells comprised of the Manes wells and Observation Well No. 6 by a continuous body of water, which blocks the migration of natural gas from the storage area. Thus, while MRI admits the existence of pressure communication between the storage area and the Manes area, it vehemently denies that gas is communicated from the storage area to the Manes area.

MRI's opposition to ONG's theory of gas communication is well based. Noting that the Dutcher moves downward with respect to sea level from north to south, MRI contends that the existence of a water table in the storage reservoir prevents the existence of a continuous gas channel between the storage area and the Manes area. MRI believes this to be the case because water, being heavier than gas, would displace any gas in the Dutcher outside the storage area, forcing that gas into the structurally higher storage area rather than into the structurally lower channel of the Dutcher between the storage area and the Manes. More simply put, MRI contends that because water seeks its own level there can be no gas in the Dutcher outside the storage area, as the storage area is a structural high in the region in which a water table exists. Thus, concludes MRI, the gas in the storage area and the gas found in the Manes wells and Observation Well No. 6 are separated by a solid column of water, causing the wells to exhibit a pressure relationship but not allowing communication of natural gas. MRI believes that the gas found in the Manes area is native natural gas occurring in the Dutcher naturally rather than by injection by ONG and migration down structure through the Dutcher.

MRI's theory is well chosen in that it depicts the natural conditions of the Dutcher sandstone at equilibrium; that is, in the undisturbed state of nature MRI's theory would no doubt be valid. However, ONG's case focuses on the assertion that the Dutcher is not in equilibrium, after over thirty years of injection and withdrawal of natural gas and injection of water. Indeed, MRI's experts confirm that the area is not in equilibrium. ONG contends that in this disturbed state a tilted water table, which would permit gas communication down structure, has occurred in the Dutcher.

The concept of a tilted water table is difficult to grasp because it is rare in nature; however, it is apparently a physical possibility notwithstanding its rarity. In essence, ONG contends that, rather than a flat water table in the Dutcher, the water table slopes downward to the south, leaving an unfilled portion of the formation through which natural gas can migrate from the storage area to the Manes wells.

ONG presents a strong evidentiary basis in support of this theory. Its engineering expert testified that the cyclical pressure changes, occasioned by the injection and withdrawal cycle, would cause natural gas in the storage area to finger out from the storage area and down the Dutcher, displacing water as it moves. This occurrence is known as gravity override, as gravity is defied when the lighter gas moves downward to displace the heavier water.

While gravity override is apparently a very unusual natural phenomenon, ONG's engineering witness opined that such a phenomenon had occurred in the Dutcher formation. This opinion spawned immediate and heated controversy; MRI's engineering experts, one of whom is apparently an expert on gravity override, vehemently denied that gravity override could occur in a system such as the Dutcher formation due to lack of volume of moving gas and a low rate of flow. MRI contends that, absent gravity override, there can be no tilted water table and therefore no gas communication.

Whether or not the existence of a tilted water table in the Dutcher may be properly attributed to the phenomenon of gravity override, the evidence presented at trial does support that the Dutcher's water

table exhibits a downward tilt toward the south. Observation Well No. 1, at the extreme north edge of the storage area, has a gas-water contact point 2458 feet below sea level. Farther south, Observation Well No. 2 has a gas-water contact point at 2472 feet below sea level. Observation Well No. 4, still farther south, has its gas-water contact point at 2540 feet below sea level. And Observation Well No. 6, the well farthest south of all and in close proximity to the Manes wells, has a gas-water contact point at 2584 feet below sea level. Thus, it is clear that the water table in the Dutcher has not reached its own level, and that the Dutcher is not water saturated continuously between the storage area and the system of wells comprised of the Manes and Observation Well No. 6. ONG argues that this reflects a continuous layer of natural gas above the connate water in the Dutcher, connecting the storage area and Observation Well No. 6 and, through this connection, the Manes wells.

The existence of gas in the Observation Wells between the storage area and the Manes wells tends to negate MRI's assertion that the Dutcher is completely water saturated between those points and therefore cannot convey gas from the storage area to the Manes wells. MRI does, however, offer an explanation of the presence of gas in those wells which is not inconsistent with its noncommunication theory. Specifically, MRI's experts testified that each of the observation wells might be drilled into a gas trap, a structural anomaly underground in which natural gas is trapped in such a way that it cannot be displaced up the structure by heavier water. Thus, while the normal pattern would be for the gas to move up structure, and the water down structure, the existence of a trap causes an isolated miniature reservoir around each of the observation wells.

This explanation, although supported by the opinion testimony of MRI's experts, is much less believable than ONG's theory of a tilted water table and strikes the Court as rather contrived. Indeed, it strains credulity to dismiss as mere happenstance the fact every one of the observation wells was drilled into a gas trap; surely one of those wells should have encountered a portion of the Dutcher not characterized by a rare structural anomaly. Thus, the Court declines to adopt such an unlikely theory; rather, the Court concludes that the Dutcher is characterized by a tilted water table, over which

gas from the storage area may pass to Observation Well No. 6 and to the Manes wells.[12] Accordingly, the Court finds that the system of wells comprised of the Manes wells and Observation Well No. 6 is in gas communication with the storage area.

D.

As there is gas communication between the storage area and the Manes wells, it follows that the gas produced by the Manes wells is ONG's extraneous storage gas and not, as MRI contends, native natural gas. There is ample evidence to support such a conclusion. ONG's engineering expert testified to his opinion that the gas produced by the Manes wells is not native natural gas because: (1) helium is found in the gas in appreciable quantities, and helium occurs only rarely, if at all, in Creek County gas fields; (2) certain organic compounds normally found in native natural gas are absent from the gas produced by the Manes wells, indicating that the gas has been previously produced and processed; (3) the gas produced by the Manes wells is dissimilar in composition from native natural gas produced by other wells in the area; and, (4) the bottom hole pressures encountered in the Manes wells do not exhibit the characteristics expected from a native natural gas reservoir. While each of these factors was disputed at trial, the Court finds credible the testimony of ONG's experts in this respect. Thus, the Court finds that the Manes wells are producing extraneous natural gas belonging to ONG and injected for storage into the Depew storage reservoir, rather than native natural gas from an isolated reservoir in the Dutcher.

E.

A final word is in order concerning the quality of the expert testimony presented at trial by the parties. The Bankruptcy Court

[12] The Court declines to usurp the role of the petroleum engineer by determining the engineering principle which explains the existence of the tilted water table. Rather, the Court simply concludes that it exists, a conclusion well supported by evidence, as noted above. Whether it occurred through gravity override or, for example, because of variable permeability in the Dutcher sandstone, is beyond the expertise of the Court to determine; however, the fact of the tilted water table's existence is well within this Court's expertise given the evidence presented at trial.

heard evidence from an impressive array of experts, all of whom boasted impeccable credentials in the areas of education and experience. The quality of the expert testimony was consistently excellent and provided invaluable assistance and enlightenment to the Bankruptcy Court and to this Court on review.

The excellence of the expert testimony does not ease the difficulty of the Court's fact finding process. The Court is required to weigh sharply conflicting testimony concerning matters well outside its area of expertise. Conditions several thousand feet below the surface are not capable of absolute and unflawed discernment; as this litigation profoundly demonstrates, even the experts disagree as to what is occurring underground. The Court is not a font of wisdom with the oracular ability to divine that which cannot be shown in concrete terms; rather, the Court is required to consider the evidence and determine that which has been proven by a preponderance of the evidence under the rules of law. Thus, in the final analysis, the outcome of this case turns on the credibility of the witnesses, and because the Court finds the testimony of ONG's witnesses, taken as a whole, to be more believable than that of MRI's witnesses, the Court concludes that ONG has sustained its burden of proof.

IV.

ONG is a natural gas utility which is charged with providing natural gas to a large number of customers. To facilitate this function, ONG maintains the Depew storage reservoir, which prevents natural gas shortage in months of high demand. As the Manes wells are producing ONG's natural gas from the Depew storage, ONG suffers irreparable harm to its ability to provide service to its customers, harm for which there is no adequate remedy at law. ONG is therefore entitled to a permanent injunction prohibiting MRI from producing any more natural gas from the Manes wells. Likewise; ONG is entitled to receive all amounts currently held by the Clerk of the Bankruptcy Court, as those amounts are the proceeds of ONG's natural gas produced and sold by MRI.

Accordingly, an appropriate form of judgment, with a permanent injunction, shall be issued by this Court in accordance with this Memorandum Opinion.

V.

The last issue to be addressed is MRI's counterclaim for abuse of process. This counterclaim was not tried during the adversary proceedings; thus, neither party is entitled to judgment thereon. However, the Court is persuaded that ONG is entitled to have the counterclaim dismissed. As the Bankruptcy Court noted, ONG has committed no abuse of process simply by pursuing this litigation to a judgment in its favor, a judgment to which it is entitled. Given the outcome of the adversary proceeding, the Court can discern no unlawful purpose in ONG's maintenance of this action. Use of process for an unlawful purpose is essential to an abuse of process claim. 1 Am. Jur.2d *Abuse of Process* § 4 (1962). *See also Blue Goose Growers, Inc. v. Yuma Groves, Inc.*, 641 F.2d 695, 696-7 (9th Cir. 1981). As MRI's counterclaim is premised on ONG's alleged use of this litigation for unlawful means, it is clear that there is no set of facts imaginable which would entitle MRI to the relief it seeks. Accordingly, MRI's counterclaim for abuse of process is dismissed. *See* Fed. R. Civ. P. 12(b)(6).

VI.

In summary, the Court reaches the following conclusions in this action:

1. MRI's Motion to the District Court Not to Approve or Endorse Proposed Findings of Fact and Conclusions of Law By the Bankruptcy Court is granted;

2. ONG has prevailed on its claim for relief and judgment shall be entered accordingly, as noted above; and,

3. MRI's counterclaim for abuse of process is dismissed for failure to state a claim upon which relief can be granted.

IT IS SO ORDERED this 20th day of March, 1985.

DAVID L. RUSSELL
UNITED STATES DISTRICT JUDGE

APPENDIX C

IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF OKLAHOMA

Bankruptcy No. 82-01390
(Chapter 11)
Adversary No. 82-0298(A)

OKLAHOMA NATURAL GAS COMPANY, a division of ONEOK INC., a Delaware corporation, *Plaintiff*,

v.

MAHAN & ROWSEY, INC., et al., *Defendants*.

FINDINGS OF FACT AND CONCLUSIONS OF LAW

This is an adversary proceeding in which the plaintiff Oklahoma Natural Gas Company seeks a permanent injunction enjoining the further production of two natural gas wells known as the Manes #1 Well and Manes #3 Well, both located in the Southeast Quarter (SE/4) of Section 12, Township 14 North, Range 7 East, in Creek County, Oklahoma. In addition, the plaintiff seeks to recover all proceeds from the natural gas produced from the wells during the period from the first production in April 1982 to October 22, 1982, after which the wells were shut-in. One defendant, Mahan & Rowsey, Inc., has filed a counterclaim against the plaintiff seeking actual and punitive damages resulting from the plaintiff bringing the instant action.

In this action, the plaintiff contends that the Manes #1 and #3 Wells were drilled and completed in its underground gas storage reservoir known as the Depew Storage, and are therefore producing natural gas owned by the plaintiff. The defendant Mahan & Rowsey, Inc., as well as all of the defendant working and royalty interest owners in the wells, contend that the Manes #1 and #3 Wells were drilled, completed, and producing natural gas from a reservoir separate and apart from the Depew Storage.

After a previous hearing on the preliminary injunction requested by the plaintiff, the Court pursuant to its Order of October 7, 1982, required the defendant purchasers of natural gas from the Manes #1 and #3 Wells, Kerr-McGee Corporation and Warren Petroleum Company, to hold all funds from the proceeds from the natural gas sales in suspense and to deposit such funds in an interest bearing escrow account at Liberty National Bank and Trust Company of Oklahoma City. Pursuant to the Orders of the Court on July 25, 1983, and August 11, 1983, defendants Kerr-McGee Corporation and Warren Petroleum Company were dismissed without prejudice from the action, and custody of the escrow account was directed to be transferred and assigned to the Clerk of the Bankruptcy Court.

The case was tried to the Court beginning on November 21, 1983, and ending on November 26, 1983. Trial on the counterclaim of the defendant Mahan & Rowsey, Inc. was bifurcated from the trial on the claim of the plaintiff Oklahoma Natural Gas Company pursuant to the Order of the Court of November 18, 1983, with the trial on the counterclaim to be deferred until a later date. That counterclaim has, however, now been disposed of pursuant to the Findings and Conclusions on Motion of Plaintiff Oklahoma Natural Gas Company to Dismiss Counterclaim of Defendant Mahan & Rowsey, Inc. being concurrently filed herein.

After considering the pleadings, the testimony and exhibits admitted at trial, all of the briefs and arguments presented by counsel for the parties, and being fully advised in the premises, the Court enters the following Findings of Fact and Conclusions of Law.

FINDINGS OF FACT

1. Plaintiff Oklahoma Natural Gas Company ("Oklahoma Natural") is a division of ONEOK Inc. which is a corporation duly organized and existing under and by virtue of the laws of the State of Delaware, and is duly authorized and is actually transacting business in the State of Oklahoma with its principal office located in Tulsa, Oklahoma.

2. Defendant Mahan & Rowsey, Inc. ("Mahan & Rowsey") is a corporation duly organized and existing under and by virtue of

the laws of the State of Oklahoma, and is actually engaged in business in said state, with its principal office located in Oklahoma City, Oklahoma.

3. Defendants Reda N. Manes, Doyle E. Manes, Norma Pond Dillard, Imo Longfellow Van Buskirk nee Davies, David H. Loeffler, Ella B. Shaw, The Sneed Company, Heirs of Leota Pond Hancock a/k/a Leota Pond Hancox, Bill E. Johns, N. F. Wilder, Heirs of W. A. Martin, Equitable Royalty Corporation, Kenneth H. Goetzke, George D. Goetzke, Ed Kerr, Inc., VISA Exploration Company, Edgar H. Tenent, Dan B. Turley, John Reynolds, Clyde Towery, Bess A. Harrington, O. B. Hayhurst, Clara Turnbull, Mrs. James A. McDonald a/k/a Luretha Paralee McDonald, Margaret Turnbull, K. L. Turnbull, Wendell H. Turnbull, and Mrs. Noel D. Moore a/k/a Patricia Jean Moore are working interest, royalty interest, or overriding royalty interest owners in the Manes #1 Well and the Manes #3 Well in Creek County, Oklahoma, whose rights and interests in such wells are affected by this action.

4. Mahan & Rowsey is the debtor in the reorganization proceeding entitled *In re: Mahan & Rowsey, Inc.*, Bankruptcy No. 82-01390(B), now before this Court, and brought pursuant to Chapter 11 of the Bankruptcy Code (11 U.S.C. § § 1101-1174).

5. Oklahoma Natural is a natural gas public utility in the State of Oklahoma, providing natural gas service to over 600,000 residential, commercial and industrial customers within the State. As a necessary part of its business as a natural gas public utility, Oklahoma Natural is engaged in the transmission, distribution and storage of natural gas in order to meet the demands and needs of its customers.

6. The only feasible method for Oklahoma Natural to store natural gas in order to meet the demands and needs of its customers and to meet its obligations under its gas purchase contracts is through the use of underground storage reservoirs. As such, Oklahoma Natural currently operates and maintains five underground storage reservoirs throughout the State of Oklahoma. In recognition of the necessity for the use of underground storage reservoirs by Oklahoma Natural and similarly situated natural gas public utilities within the

State, the Oklahoma Legislature has by enactment of what is now 52 O.S. 1981, § § 36.1 - 36.7, authorized Oklahoma Natural and other natural gas public utilities to exercise the right of eminent domain to acquire underground storage reservoirs.

7. In furtherance of its natural gas public utility business, Oklahoma Natural acquired the underground storage reservoir known as the Depew Storage which is an exhausted natural gas field in the Dutcher Sand Formation at a depth of approximately 3,300 feet underlying certain property in Creek County, Oklahoma. On or about December 27, 1967, the Corporation Commission of Oklahoma, pursuant to its authority under what is now 52 O.S. 1981, §§ 36.1 - 36.7, entered its Order No. 67796 in Cause CD No. 27347, certifying the Depew Storage as suitable and in the public interest for use by Oklahoma Natural for the underground storage of natural gas. The Manes #1 Well and the Manes #3 Well are not located within the area as certified by the Corporation Commission permitting Oklahoma Natural to exercise the right of eminent domain.

8. As stipulated to by the parties, the copies of Order No. 67796 in Cause CD No. 27347 and Order No. 72566 in Cause CD No. 30121 (modifying Order No. 67796 in respects not material hereto) of the Corporation Commission of Oklahoma attached as Exhibit "A" to the Complaint are true and correct copies of those documents as entered by and filed with the Corporation Commission of Oklahoma.

9. As a part of its acquisition of the Depew Storage, Oklahoma Natural obtained and now currently holds Gas Storage Agreements from the owners of the entire surface interest in the West One-Half (W/2) of the Southeast Quarter (SE/4) of Section 12, Township 14 North, Range 7 East, in Creek County, Oklahoma. Oklahoma Natural also obtained and now currently holds Gas Storage Agreements from the owners of the entire mineral interest in the Southwest Quarter (SW/4) of the Southeast Quarter (SE/4) of Section 12, Township 14 North, Range 7 East, and the owners of an undivided one-third (1/3) mineral interest in the Northwest Quarter (NW/4) of the Southeast Quarter (SE/4) of Section 12, Township 14 North, Range 7 East. Oklahoma Natural thus holds storage agreements

with all the surface interest owners and one-third (1/3) of the mineral interest owners in the Manes #1 Well, and all the surface and mineral interest owners in the Manes #3 Well. None of the parties have contested the right of Oklahoma Natural to store natural gas in that part of the Depew Storage underlying the Manes #1 and #3 Wells.

10. As stipulated to by the parties, the copies of the Gas Storage Agreements referred to in paragraph 9 above, and attached as Exhibit "B" to the Complaint, are true and correct copies of those documents as filed with the Office of the County Clerk of Creek County, Oklahoma.

11. By virtue of Order No. 67796 of the Corporation Commission of Oklahoma and the above-mentioned Gas Storage Agreements (and others not relevant hereto), Oklahoma Natural acquired the right to operate and maintain the Depew Storage for the underground storage of natural gas. Since 1950, Oklahoma Natural has operated and maintained the Depew Storage for the underground storage of natural gas and has invested over $7,682,000 in installing equipment and facilities to use the Depew Storage for the storage of natural gas.

12. Upon acquiring its rights in the Depew Storage, Oklahoma Natural commenced and has thereafter continued to inject extraneous natural gas belonging to Oklahoma Natural into the Depew Storage and withdrawing the same in order to meet the demands and needs of its customers. The term "extraneous natural gas" as used herein means natural gas which was not produced from the Depew Storage but produced elsewhere which was purchased and owned by Oklahoma Natural. All of the natural gas which has been injected and subsequently withdrawn by Oklahoma Natural from the Depew Storage was extraneous natural gas in that the Depew Storage was a depleted underground natural reservoir in which there remained no native natural gas. Since Oklahoma Natural commenced injecting natural gas in the Depew Storage in 1950, there have been no withdrawals of natural gas by anyone other than Oklahoma Natural, except as more fully set forth in the findings herein with respect to the actions of Mahan & Rowsey in the drilling, completion, and production of the Manes #1 Well and Manes #3 Well.

13. Commencing in the year 1981, Mahan & Rowsey through the acquisition of leases, assignments of leases, and other agreements, obtained a working interest in and the operating rights for wells to be drilled in the West One-Half (W/2) of the Southeast Quarter (SE/4) of Section 12, Township 14 North, Range 7 East, in Creek County, Oklahoma. Soon thereafter, in the latter part of 1981, Mahan & Rowsey drilled the Manes #1 Well in the Northwest Quarter (NW/4) of the Southeast Quarter (SE/4) of Section 12, Township 14 North, Range 7 East, and the Manes #3 Well in the Southwest Quarter (SW/4) of the Southeast Quarter (SE/4) of Section 12, Township 14 North, Range 7 East.

14. Upon the drilling and completion of the Manes #1 Well and the Manes #3 Well, Mahan & Rowsey entered into a Gas Purchase Contract on or about February 4, 1982, with Kerr-McGee Corporation ("Kerr-McGee") and Warren Petroleum Company ("Warren") under which Mahan & Rowsey agreed to sell all natural gas produced from the Manes #1 Well and the Manes #3 Well to Kerr-McGee and Warren.

15. Since the Manes #1 Well and the Manes #3 Well commenced production in April, 1982, all natural gas produced from said wells through October 22, 1982, was received and purchased by Kerr-McGee and Warren. Kerr-McGee and Warren did not pay Mahan & Rowsey the proceeds from the sale of the natural gas produced from the Manes #1 Well and the Manes #3 Well, but such funds were held in suspense subject to the correction of certain title defects and later pursuant to the Order of this Court of October 7, 1982.

16. On October 22, 1982, Kerr-McGee and Warren ceased purchasing natural gas from the Manes #1 Well and Manes #3 Well, and the wells were shut-in. As of that date, Kerr-McGee and Warren were holding gas purchase proceeds attributable to the Manes #1 and #3 Wells in the amount of $731,233.80 in Escrow Account No. 78009724 at the Liberty National Bank and Trust Company of Oklahoma City pursuant to the Order of this Court of October 7, 1982.

17. Upon the dismissal of Kerr-McGee and Warren as party defendants in this action pursuant to the Orders of this Court of July 25, 1983, and August 11, 1983, custody of the Escrow Account was directed to be assigned and transferred to the Clerk of the Bankruptcy Court until further Order of the Court. Pursuant to an Assignment of Escrow Account filed herein on September 29, 1983, custody of Escrow Account No. 780097424 at the Liberty National Bank and Trust Company of Oklahoma City was transferred and assigned to the Clerk of the Bankruptcy Court. As of October 3, 1983, the Clerk of the Bankruptcy Court was holding the gas purchase proceeds (including interest thereon) attributable to Manes #1 and #3 Wells in the amount of $792,610.69 in a certificate of deposit in Account No. 2-6861-3 at the Liberty National Bank and Trust Company of Oklahoma City.

18. The geological evidence presented at trial consisted of a stratigraphic analysis of the formations of the Depew Storage reservoir and the Manes #1 and #3 Wells based upon geologic cross-sections, structural maps, and isopach maps. Such a geological interpretation is inexact for no one can see what is 3,000 to 4,000 feet below the surface of the earth.

19. The geologic interpretations presented at trial also necessarily depended upon the analysis of electric logs which is subject to many variables. Many of the electric logs involved were run long ago prior to technological advancements, and such logs are not as accurate as modern logs may be.

20. As demonstrated at trial, even the finest of geologists can unintentionally overlook significant elements in a stratigraphic analysis due to the problems encountered in making a graphic presentation of three-dimensional structures in two-dimensional drawings. Such an example of these problems and the possible errors involved was shown on the cross-examination of the Mahan & Rowsey geology witness Dr. Daniel Busch ("Busch") who testified that an accurate structure map depended upon every correlation of the electric logs being correct, but who had in his own interpretation shown an older geologic bed lying above a younger bed which did not occur in the involved area.

21. Based upon the evidence presented at trial, the geological stratigraphic analysis was helpful, but it was shown not to be conclusive and subject to errors in interpretation.

22. The geological analysis was further shown to be difficult by the abnormal nature of the area involved. The area of the Manes #1 and #3 Wells and the Depew Storage was shown to be abnormal in that vast amounts of extraneous natural gas and water have been injected into the Depew Storage reservoir which does not normally occur in nature. The area was also shown to be faulted to a high degree. Additionally, the Mahan & Rowsey witness Busch testified that many of the wells involved may not have been properly completed or plugged. The possible or probable incidence of such improper completions and plugging increases with the age of the well, and many of the wells involved in this matter were very old. The possibility of improper plugging of wells, faulting, and the presence of permeability or porosity fingers or lenses could all be factors in determining the source of gas communication between the Manes #1 and #3 Wells and the Depew Storage reservoir.

23. As testified to by the Oklahoma Natural geology witness Dr. Philip Chenoweth ("Chenoweth"), the two geologic formations involved are the Dutcher Sand formation and the underlying Morrow Sand formation. Such terminology will be used herein as opposed to the terminology used by the defendants in labeling the Dutcher Sand formation as the Atoka Sand formation, and the Morrow Sand formation as the Pennsylvanian Unconformity Sand formation.

24. An additional complicating factor in this matter was that the Manes #1 and #3 Wells were not perforated at the interval where the defendants contended the Dutcher Sand formation was located. Therefore, no one can say how the Manes #1 and #3 Wells would have performed had they been perforated at this stratigraphic interval.

25. While much of the petroleum engineering testimony was in dispute, it did establish some known facts. It was shown in Oklahoma Natural's Exhibit Nos. 24, 25, 26, 27, and 47 that the pressures in the Manes #1 and #3 Wells were strikingly similar to the pressures of the observation wells in the Depew Storage. It

was further shown in Oklahoma Natural's Exhibit Nos. 28 and 29 that the heating value and components of the natural gas in the Manes #1 and #3 Wells were strikingly similar to the natural gas from the observation wells of the Depew Storage. The Carbon 13 analysis of the natural gas of the Manes Wells and Observation Well No. 6 of the Depew Storage was also shown to be strikingly similar in Oklahoma Natural's Exhibit No. 30. Additionally, the water analysis shown in Oklahoma Natural's Exhibit No. 32 indicates a striking similarity between the water from Manes Wells and that from the observation wells of the Depew Storage.

26. The gas storage history of the Depew Storage shown in Oklahoma Natural's Exhibit No. 33 shows that the wells in the crucial area of the Depew Storage reservoir have a remarkably similar pressure history. The results of the mathematical simulation model of the storage reservoir in Oklahoma Natural's Exhibit No. 33 and other exhibits show the relationship of Observation Well No. 6 and the active storage reservoir through the marked similarities in actual pressure history. The model also vividly demonstrates the effect of the Manes #1 and #3 Wells on the Depew Storage reservoir.

27. Oklahoma Natural Exhibit No. 25 is convincing by its demonstration that when the Manes #1 and #3 Wells first started production that the pressure in Observation Well No. 6 declined, and that when the Manes Wells were shut-in six months later the pressures in the Manes Wells rose in a pattern virtually identical to that of Observation Well No. 6. The testimony also showed that the rise in pressure of the Manes Wells after they were shut-in in October 1982 was not normal, and that the Depew Storage reservoir caused the build-up in pressures in the wells. Oklahoma Natural Exhibit No. 33 further indicates that the Manes Wells were shut-in during the time of injection in the Depew Storage reservoir.

28. The Depew Storage reservoir was shown to have many of the factors which would cause a gas override or tilted water table showing that there was gas and pressure communication between the Depew Storage reservoir and the Manes #1 and #3 Wells. Among the factors shown to exist causing the gas override or tilted

water table in the Depew Storage reservoir were the abnormally high pressures from gas and water injection, the high porosity indicating a probability of fluid saturation, and the gas cap expansion in the storage reservoir.

29. It is most probable that gas has displaced water in the Depew Storage reservoir resulting in the tilted water table, and thus the direct gas communication between the Manes #1 and #3 Wells and the Depew Storage reservoir.

30. The defendants' theory that gas escaped from the Depew Storage reservoir to the North resulting in an increase in the water table is unlikely. As shown by the Oklahoma Natural witness Chenoweth, the escape of gas is unlikely because of the presence of faulting in the escape area in the North which would form a barrier. The engineering pressure analysis by the Oklahoma Natural engineering witness E. J. Hudson ("Hudson") also showed that the escape of gas would be unlikely.

31. There is a believable probability that the necessary gas communication exists between the Manes #1 and #3 Wells and the Depew Storage reservoir. The Oklahoma Natural witness Hudson is convincing in his testimony that the gas displacement phenomenon is a distinct possibility in this area, and it is therefore likely that Manes Wells are in gas communication with Observation Well No. 6 and the active area of the Depew Storage reservoir. While there may be other explanations for what causes the gas communication, the evidence shows that it is most probable that the gas communication does exist between the Manes Wells and the Depew Storage reservoir.

32. The pulse test and mathematical calculations of the Oklahoma Natural witness Hudson also indicate the existence of gas communication between the Manes #1 and #3 Wells and Observation Well No. 6. Although these tests were not performed under laboratory conditions, they are further convincing evidence of the necessary gas communication between the Manes #1 and #3 Wells and the Depew Storage reservoir.

33. The testimony of the Oklahoma Natural witness Hudson that

the injected water moved away from the Depew Storage reservoir is convincing and more plausible than the testimony of the Mahan & Rowsey engineering witness Don Mooney that the injected water went into the storage reservoir resulting in a reduced capacity.

34. The inventory verification analysis test testified to by the Oklahoma Natural witness Hudson gives further evidence that gas is not escaping from the Depew Storage reservoir, and that storage reservoir is increasing in size. This also provides further evidence of the necessary gas communication between the Manes #1 and #3 Wells and the Depew Storage reservoir.

35. While the mathematical simulation model of the Oklahoma Natural witness Hudson was attacked, it is convincing because it was shown that witness Hudson conducted all prudent tests to verify its accuracy. The model provides further credible information on the gas communication between the Manes #1 and #3 Wells and the Depew Storage reservoir. Even if the gas displacement theory was discarded, there is still evidence to show the necessary gas communication between the Manes #1 and #3 Wells and the Depew Storage reservoir although it cannot be explained as a matter of scientific fact.

36. The Mahan & Rowsey engineering witness Dr. Farouk Allam was listened to carefully by the Court, even though Oklahoma Natural was not given fair notice of this witness with an opportunity to depose him. Witness Allam was a complete surprise witness. However, witness Allam did confirm that the Manes #1 and #3 Wells and Observation Well No. 6 were in pressure communication, although he did not know if there was gas communication. Witness Allam also testified that there did not need to be a gas override or tilted water table for there to be gas communication between the Manes #1 and #3 Wells and the Depew Storage reservoir.

37. On cross-examination of the Mahan & Rowsey of the Mahan & Rowsey witness Busch, he confirmed that the pressures in the Manes #1 and #3 Wells were increasing. Since something has to cause the increased pressures in the Manes Wells, the gas communication between the Manes Wells and the Depew Storage reservoir is a logical explanation.

38. The testimony of the Court's witness Ralph Espach was very helpful, although it is now apparent that the testimony of a petroleum engineer rather than a geologist (as is witness Espach) would have been more helpful as a Court witness. While it was the opinion of witness Espach that the Manes #1 and #3 Wells and Observation Well No. 6 probably formed a reservoir separate from the Depew Storage reservoir, he did confirm that the Manes #1 and #3 Wells and Observation Well No. 6 are in gas communication which could be caused by a fault, leaky well or some other reason.

39. The testimony of the Mahan & Rowsey witness Busch that the Manes #1 and #3 Wells and Observation Well No. 6 were in a reservoir separate from the Depew Storage reservoir was largely discredited by his failure to make the necessary geologic cross-sections in the critical areas. Even the amended interpretation of witness Busch made during the course of trial appeared to contain defects and geological impossibilities.

40. The geology in the critical area between the Manes #1 and #3 Wells and the active part of the Depew Storage reservoir is of extreme importance. At this time, all that is known is that no one knows for sure what lies 3,000 to 4,000 feet below the surface of the earth. In any event, the existence of a barrier between the Manes #1 and #3 Wells and the Depew Storage reservoir is not proven, and the probability of the necessary gas communication does exist.

41. Under all the facts, the most plausible explanation for the phenomena which have occured is that there is gas communication between the Manes #1 and #3 Wells and the Depew Storage reservoir, and it has been measured by the petroleum engineers. The petroleum engineering evidence is more empirical than the geological stratigraphic analysis. The petroleum engineering evidence is based on matters which relate directly to known facts, such as the reading of gauges, the analysis of actual samples of gas and fluids, and mathematically verifiable calculations.

42. The Oklahoma Natural paleontology testimony was helpful because the study of paleontology is one of the more exact forms of earth science in that identifiable dated fossils can be directly

observed by the scientists. The Oklahoma Natural paleontology witness Dr. James Derby ("Derby") reviewed and compared fossil evidence from the Manes #1 and #3 Wells and the active area of the Depew Storage reservoir. The fossils were examined under laboratory conditions and confirmed the geological similarities between the active part of the Depew Storage reservoir and the Manes #1 and #3 Wells, and also confirmed the stratigraphic interpretation of the Oklahoma Natural geology witness Chenoweth. It was of special significance that no Morrow Sand fossils were located in the Manes Wells. The paleontology testimony provides further evidence that the Manes Wells were producing from the Dutcher Sand formation of the Depew Storage reservoir, and not the Morrow Sand formation as contended by the defendants. The testimony of the Oklahoma Natural witness Derby was not controverted to any substantial degree.

43. The defendants based a considerable part of their case on mineralogy, but they did not have samples from the crucial intervals in the Manes #1 and #3 Wells which could indicate the presence of either the Dutcher or Morrow Sand. These samples were publicly available because the Oklahoma Natural witness Chenoweth obtained and examined those samples from the 3,000 to 3,925 foot interval. The study of those samples by witness Chenoweth showed that they were not similar to Morrow Sand samples because they possessed less limestone than what would normally be found. Witness Chenoweth provided the only testimony concerning samples taken from the critical area, and his testimony further supports that the Manes Wells were not completed in the Morrow Sand. Samples from the critical area were available from a public commercial source, and the failure of the defendants to obtain and examine such samples indicates that their preparation in this area might have been more thorough.

44. The testimony of the Oklahoma Natural company representative witness J. M. McUsic establishes that the continued production of extraneous natural gas by the Manes #1 and #3 Wells from the Depew Storage would have a severely injurious effect on Oklahoma Natural and its utility customer. Additionally, the testimony of witness McUsic established that Oklahoma Natural did not and

never intended to abandon any of the extraneous natural gas produced by the Manes Wells. There was a complete absence of any evidence which would indicate that Oklahoma Natural ever intended to abandon any of the extraneous natural gas produced or capable of being produced by the Manes Wells.

CONCLUSIONS OF LAW

1. The Court has jurisdiction under the *District Court Rule on Referral Bankruptcy Cases*, Misc. No. 9 (W.D. Okla. Dec. 22, 1982) and 28 U.S.C. § 1471, all as more fully set forth in the Order of the District Judge herein on June 29, 1983.

2. The burden or standard of proof on Oklahoma Natural as the plaintiff in this matter is that it must establish its case by a preponderance of the evidence. Oklahoma Natural has established by a preponderance of the evidence that the Manes #1 and #3 Wells were completed and producing natural gas from the Dutcher Sand formation which is the same formation as that of the storage reservoir of the Depew Storage of Oklahoma Natural. Oklahoma Natural has further established by a preponderance of the evidence that the Manes #1 and #3 Wells are in gas communication with the Depew Storage reservoir, and that the natural gas which has been produced by the Manes #1 and #3 Wells was extraneous natural gas owned by Oklahoma Natural.

3. Since the Manes #1 and #3 Wells are completed in the Dutcher Sand formation of the Depew Storage of Oklahoma Natural, they are capable of only producing extraneous natural gas owned by Oklahoma Natural.

4. Oklahoma Natural did not abandon any of the extraneous natural gas owned by it which has been produced by the Manes #1 and #3 Wells, nor has Oklahoma Natural abandoned any of the extraneous natural gas owned by it which the Manes Wells are capable of producing.

5. Any further production of the Manes #1 and #3 Wells from the Depew Storage, and which would thereby appropriate extraneous natural gas owned by Oklahoma Natural, will cause Oklahoma

Natural and its utility customers to suffer irreparable injury, loss and damage for which Oklahoma Natural is without an adequate remedy at law.

6. Oklahoma Natural is entitled to a permanent injunction enjoining the defendants from producing or otherwise taking any natural gas from the Manes #1 and #3 Wells, and said wells should be plugged unless Oklahoma Natural should desire to purchase the wells from the bankrupt estate of Mahan & Rowsey.

7. Oklahoma Natural is entitled to recover all funds now held by the Clerk of the Bankruptcy Court in Account No. 2-6861-3 at the Liberty National Bank and Trust Company of Oklahoma City, which represents the proceeds and interest thereon from the natural gas produced from the Manes #1 and #3 Wells from first production in April 1982 until October 22, 1982, when the wells were shut-in.

8. As more fully set forth in the Findings and Conclusions on Motion of Plaintiff Oklahoma Natural Gas Company to Dismiss Counterclaim of Defendant Mahan & Rowsey, Inc. being concurrently filed herein, the counterclaim of Mahan & Rowsey against Oklahoma Natural fails to state a claim upon which relief can be granted and should be dismissed pursuant to Bankruptcy Rule 7012(b) and Fed. R. Civ. P. 12(b)(6).

ENTERED this 7th day of December, 1983.

RICHARD L. BOHANON
UNITED STATES BANKRUPTCY JUDGE